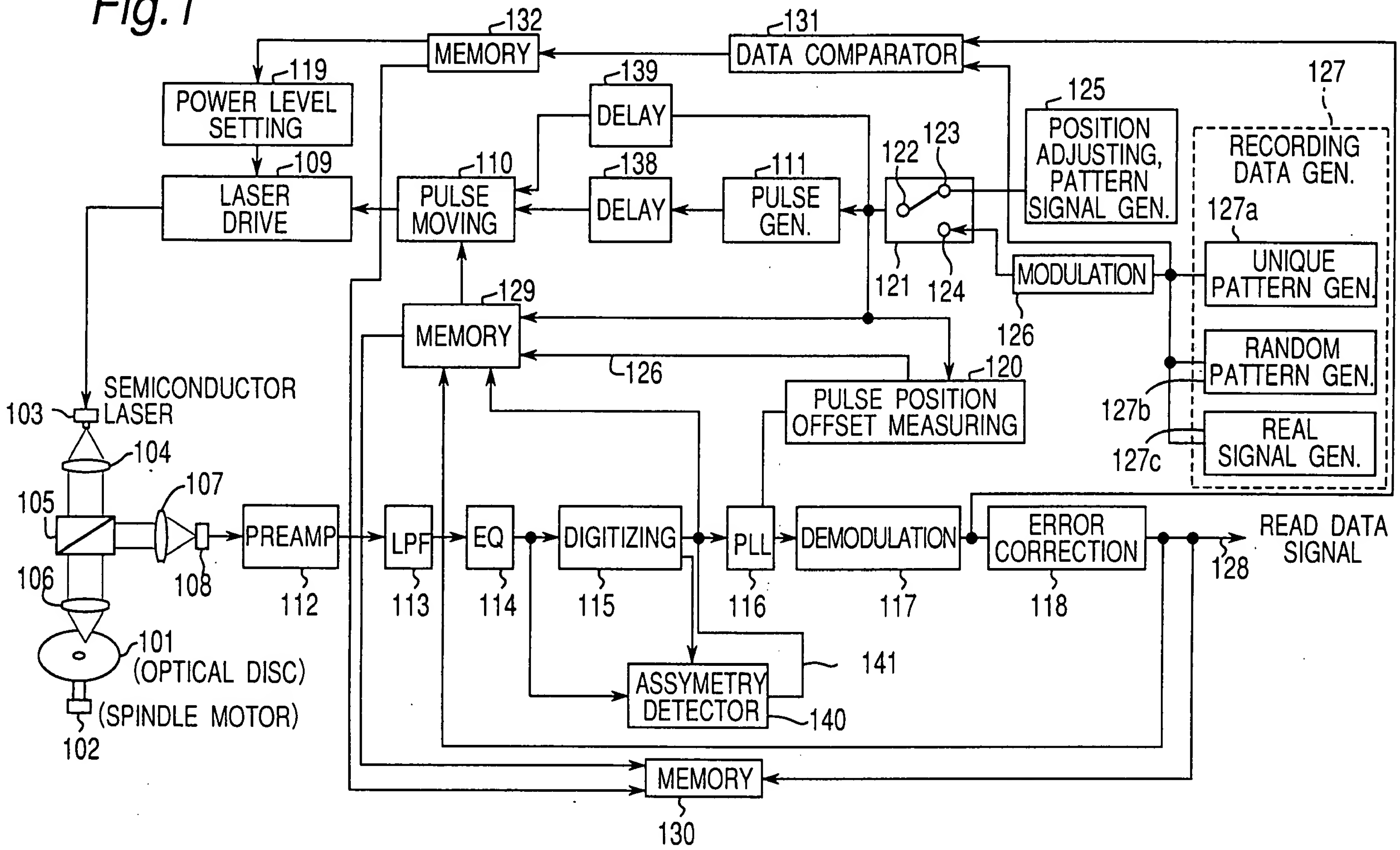
Fig.1



MEMORY
132
DATA COMPARATOR
131
POWER LEVEL SETTING
119
DELAY
139
127
POSITION ADJUSTING, PATTERN SIGNAL GEN.
125
RECORDING DATA GEN.
LASER DRIVE
109
PULSE MOVING
110
DELAY
138
PULSE GEN.
111
122
123
127a
UNIQUE PATTERN GEN.
MODULATION
121
124
129
MEMORY
126
126
120
RANDOM PATTERN GEN.
SEMICONDUCTOR LASER
103
PULSE POSITION OFFSET MEASURING
127b
REAL SIGNAL GEN.
104
127c
107
105
PREAMP
LPF
EQ
DIGITIZING
PLL
DEMODULATION
ERROR CORRECTION
READ DATA SIGNAL
128
106
108
112
113
114
115
116
117
118
101
(OPTICAL DISC)
141
ASSYMETRY DETECTOR
140
(SPINDLE MOTOR)
102
MEMORY
130

Fig.2

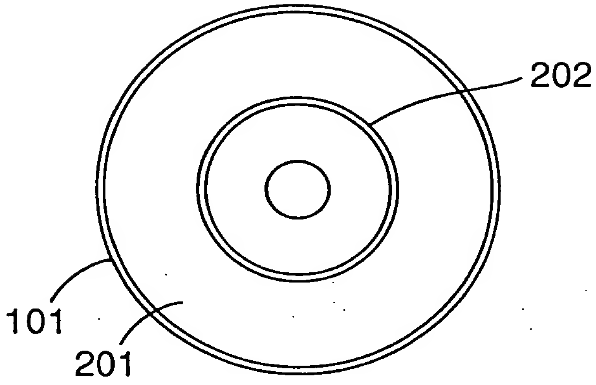
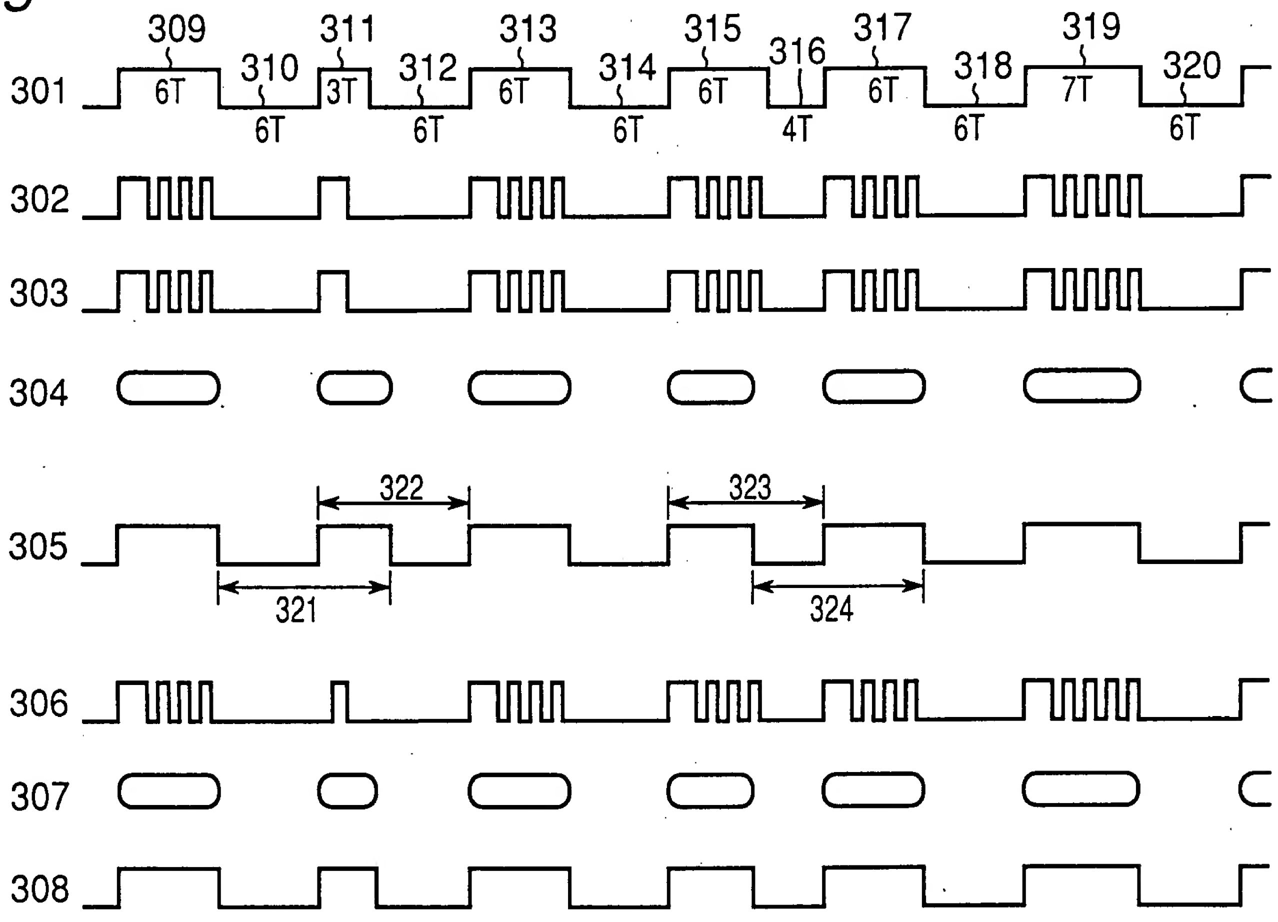


Fig.3



309
6T
310
6T
311
3T
312
6T
313
6T
314
6T
315
6T
316
4T
317
6T
318
6T
319
7T
320
6T
301
302
303
304
322
323
305
321
324
306
307
308

Fig.4

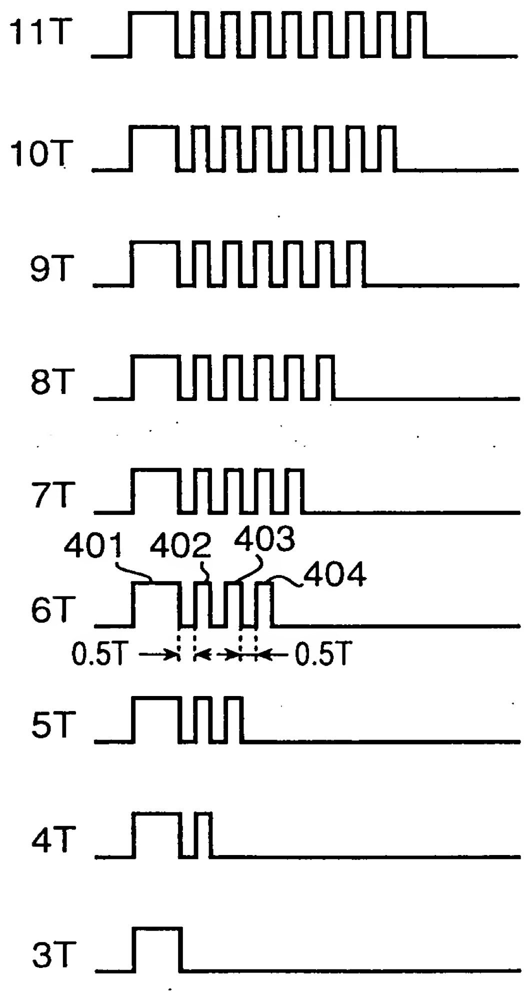


Fig.5A

FIRST PULSE MOVEMENT (TF)		MARK SIGNAL ≧5T	MARK SIGNAL 4T	MARK SIGNAL 3T
PRECEDING SPACE SIGNAL	≧5T	5S5M	5S4M	5S3M
PRECEDING SPACE SIGNAL	4T	4S5M	4S4M	4S3M
PRECEDING SPACE SIGNAL	3T	3S5M	3S4M	3S3M

LAST PULSE MOVEMENT (TL)		MARK SIGNAL ≧5T	MARK SIGNAL 4T	MARK SIGNAL 3T
FOLLOWING SPACE SIGNAL	≧5T	5M5S	4M5S	3M5S
FOLLOWING SPACE SIGNAL	4T	5M4S	4M4S	3M4S
FOLLOWING SPACE SIGNAL	3T	5M3S	4M3S	3M3S

Fig.5B

FIRST PULSE MOVEMENT (TF)		MARK SIGNAL ≧5T	MARK SIGNAL 4T	MARK SIGNAL 3T
PRECEDING SPACE SIGNAL	≧5T	5S5M0	5S4M0	5S3M0
PRECEDING SPACE SIGNAL	4T	4S5M0	4S4M0	4S3M0
PRECEDING SPACE SIGNAL	3T	3S5M0	3S4M0	3S3M0

LAST PULSE MOVEMENT (TL)		MARK SIGNAL ≧5T	MARK SIGNAL 4T	MARK SIGNAL 3T
FOLLOWING SPACE SIGNAL	≧5T	5M5S0	4M5S0	3M5S0
FOLLOWING SPACE SIGNAL	4T	5M4S0	4M4S0	3M4S0
FOLLOWING SPACE SIGNAL	3T	5M3S0	4M3S0	3M3S0

Fig.6

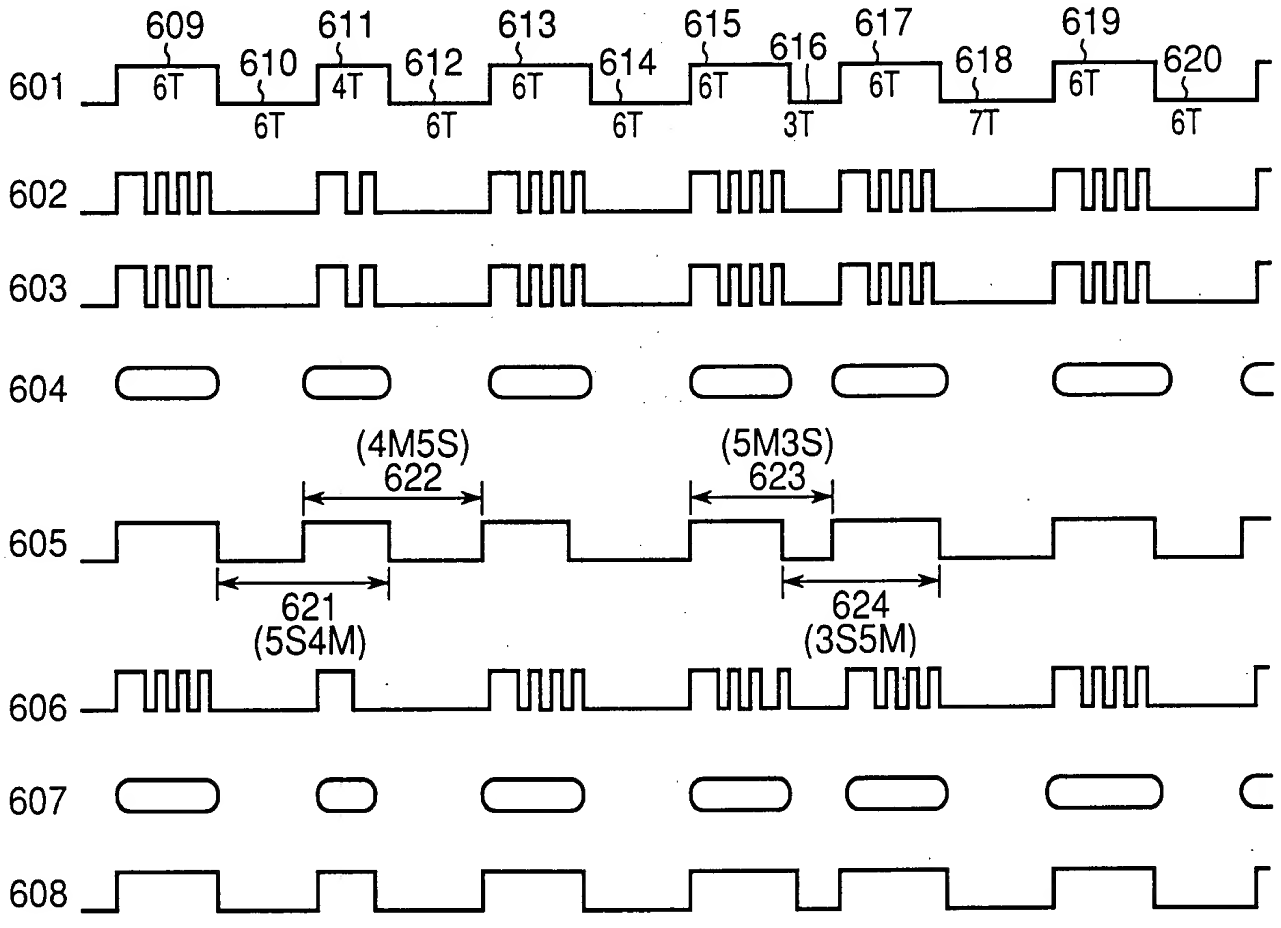

609
610
611
612
613
614
615
616
617
618
619
620
6T
6T
4T
6T
6T
6T
6T
3T
6T
7T
6T
6T
601
602
603
604
605
606
607
608
(4M5S)
622
(5M3S)
623
621
(5S4M)
624
(3S5M)

Fig.7

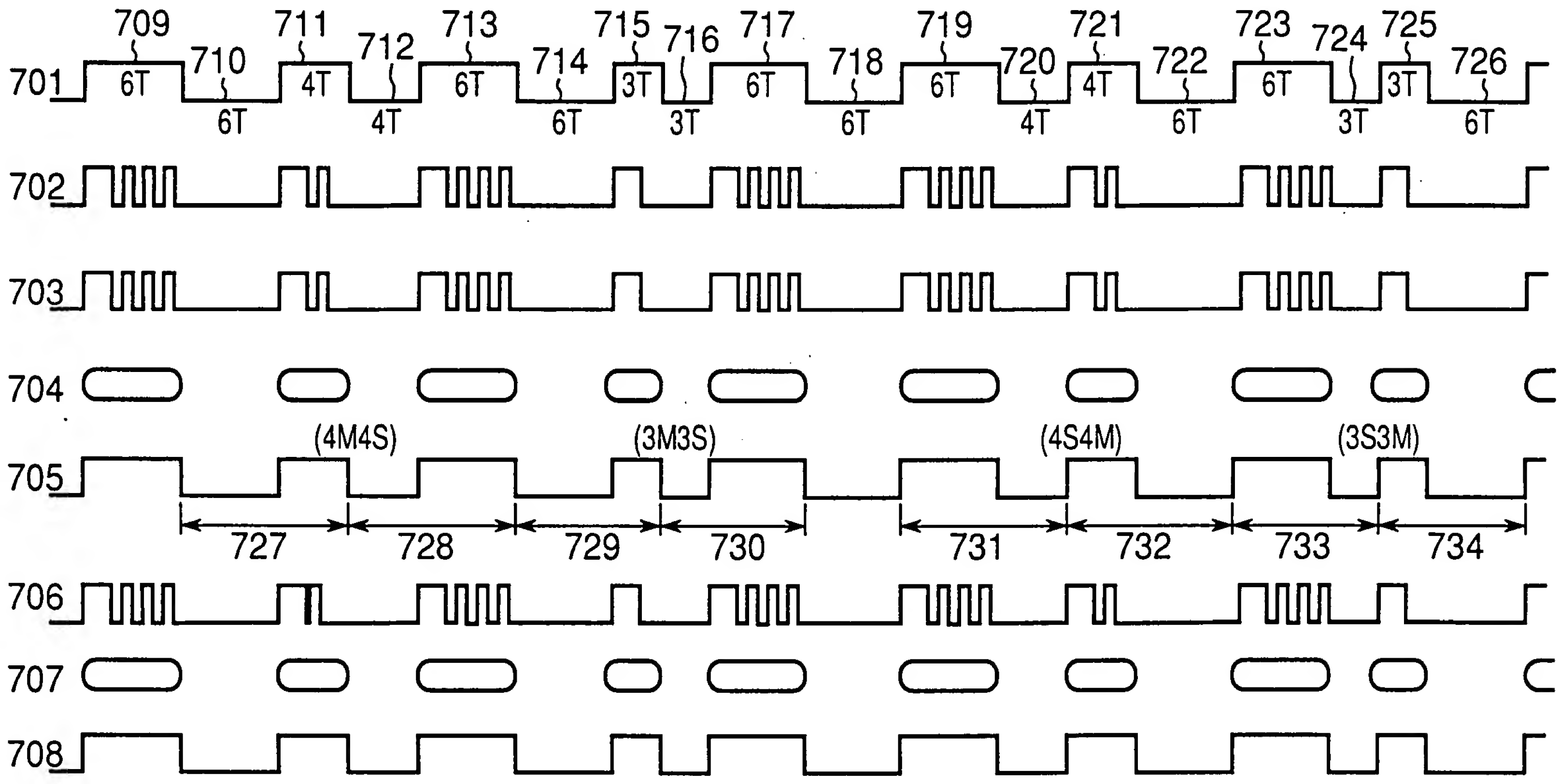

709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
701
6T
6T
4T
4T
6T
6T
3T
3T
6T
6T
6T
4T
4T
6T
6T
3T
3T
6T
702
703
704
(4M4S)
(3M3S)
(4S4M)
(3S3M)
705
727
728
729
730
731
732
733
734
706
707
708

Fig.8

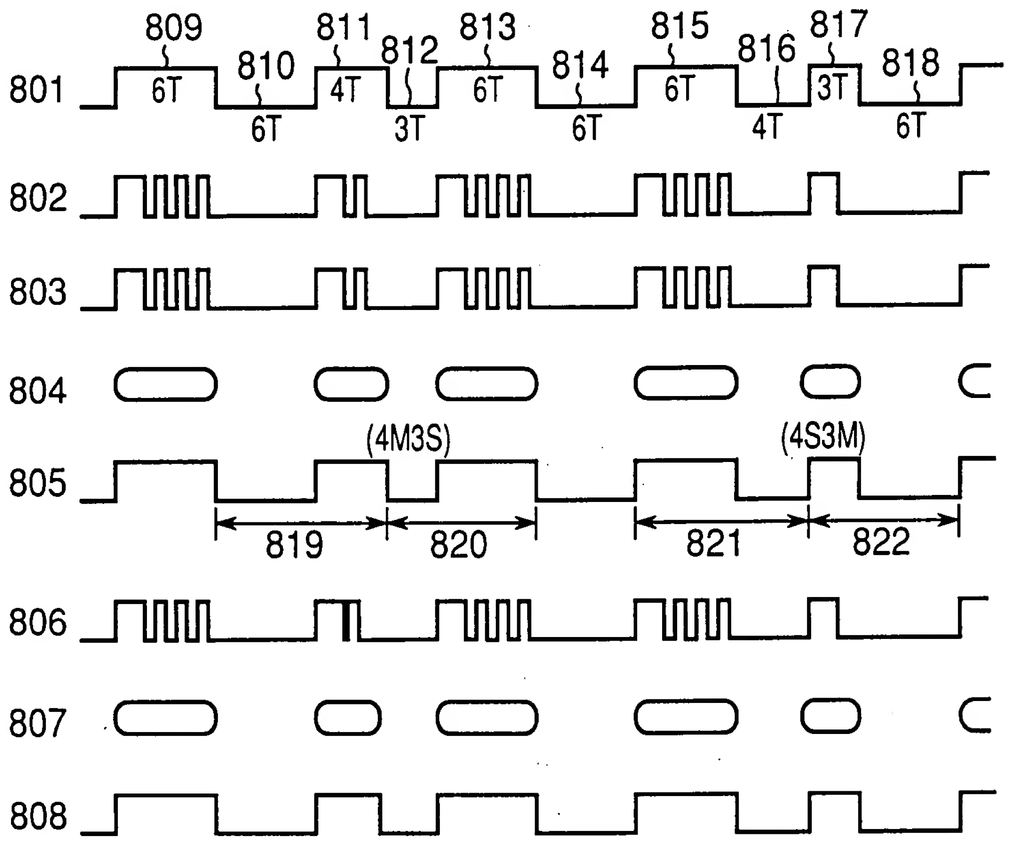

809
810
811
812
813
814
815
816
817
818
801
6T
6T
4T
3T
6T
6T
6T
4T
3T
6T
802
803
804
805
(4M3S)
(4S3M)
819
820
821
822
806
807
808

Fig.9

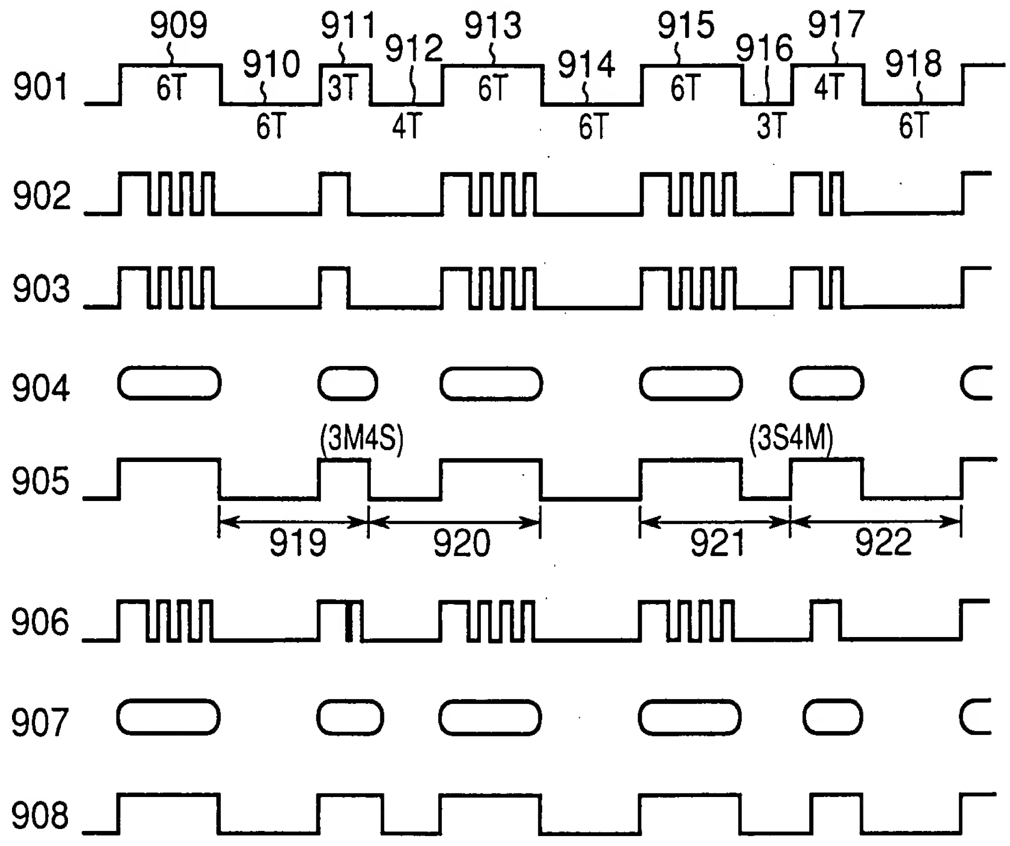
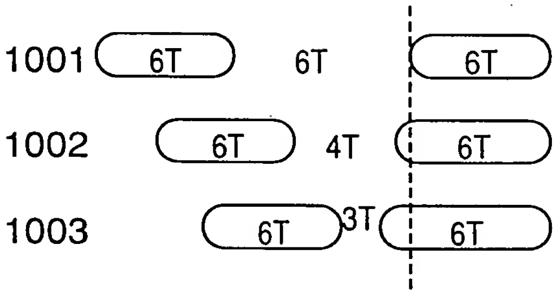
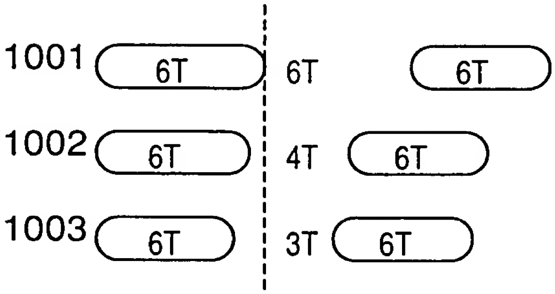

901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
6T
6T
3T
4T
6T
6T
6T
3T
4T
6T
(3M4S)
(3S4M)
919
920
921
922

Fig.10



1001
6T
6T
6T
1002
6T
4T
6T
1003
6T
3T
6T

Fig.11



1001
6T
6T
6T
1002
6T
4T
6T
1003
6T
3T
6T

Fig. 12

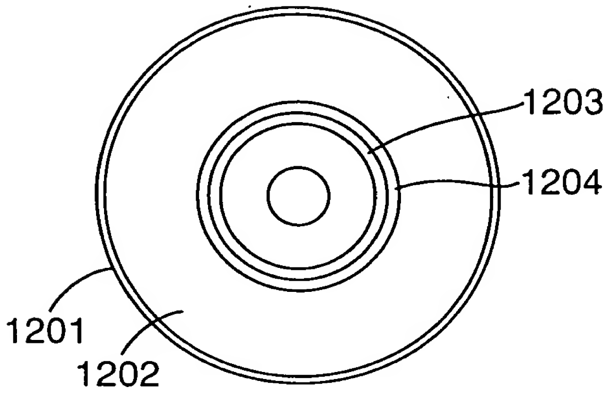


Fig. 13

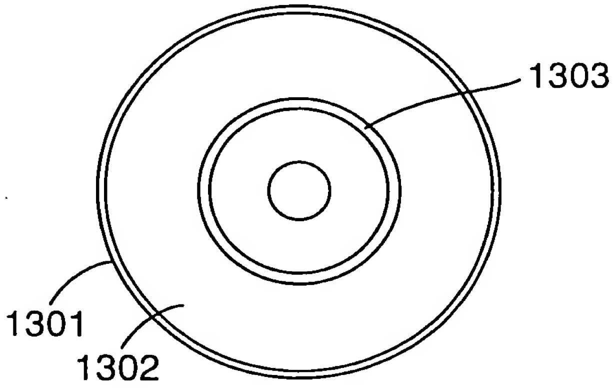


Fig.14

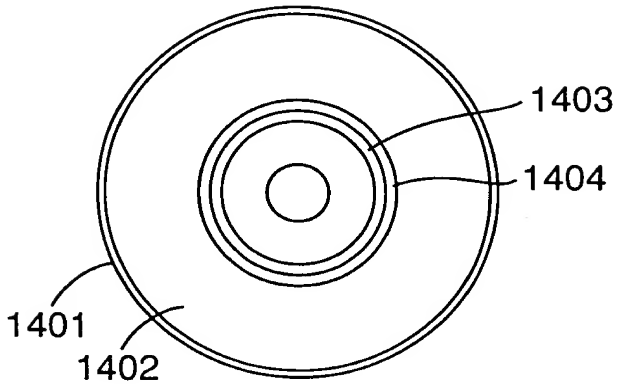


Fig.15

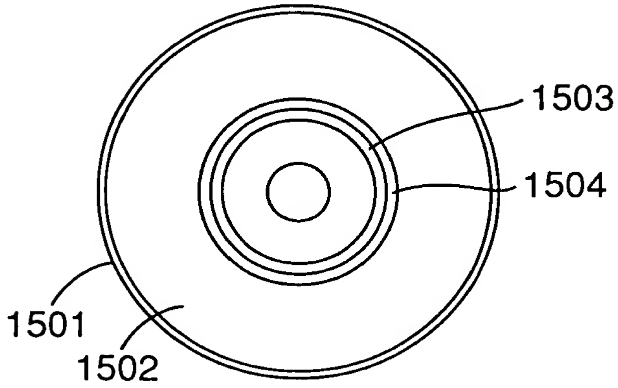


Fig.16

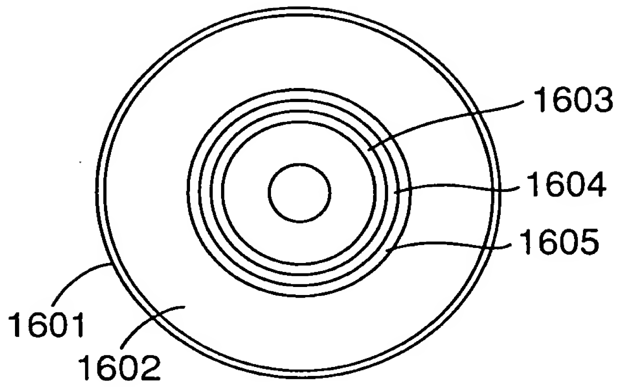


Fig.17

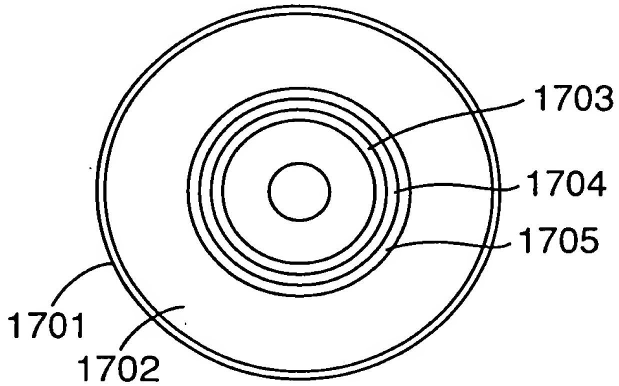


Fig. 18

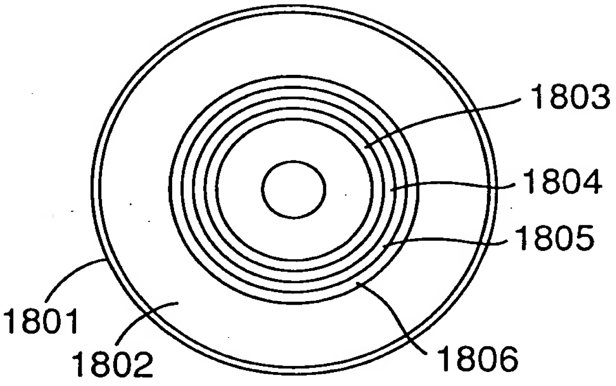


Fig.19

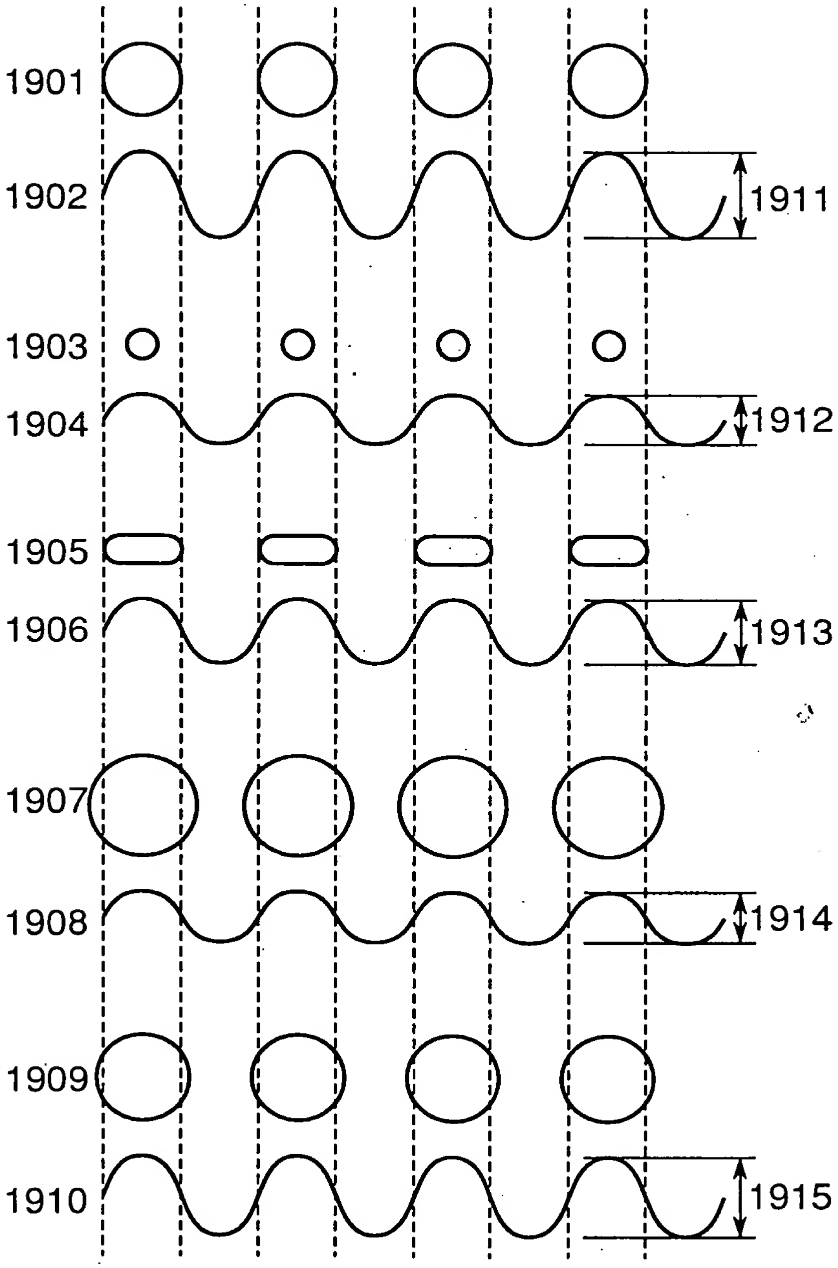

1901
1902
1911
1903
1904
1912
1905
1906
1913
1907
1908
1914
1909
1910
1915

Fig.20A

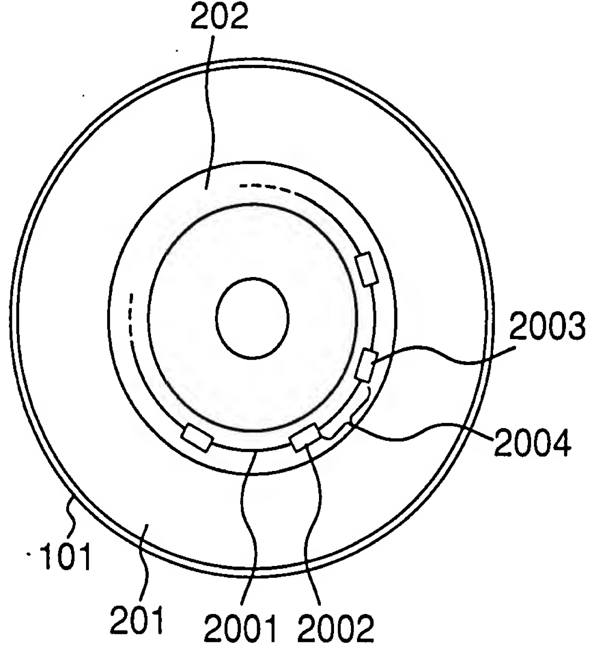


Fig.20B

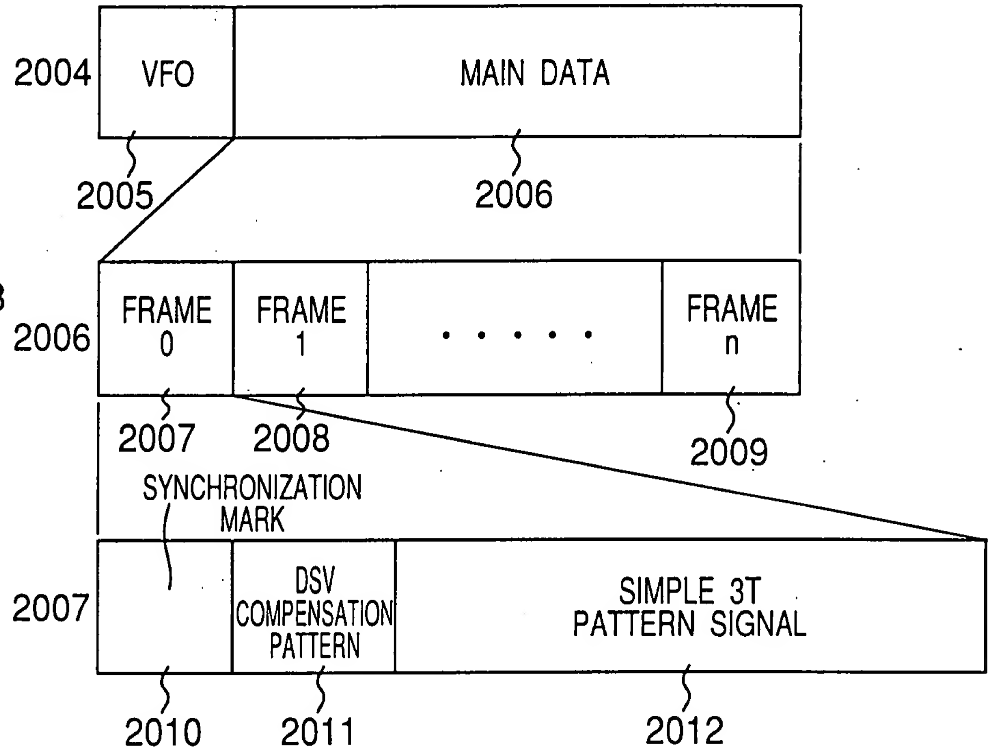


Fig.20C

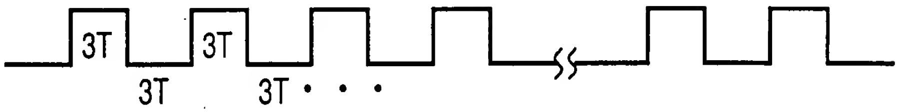


Fig.21

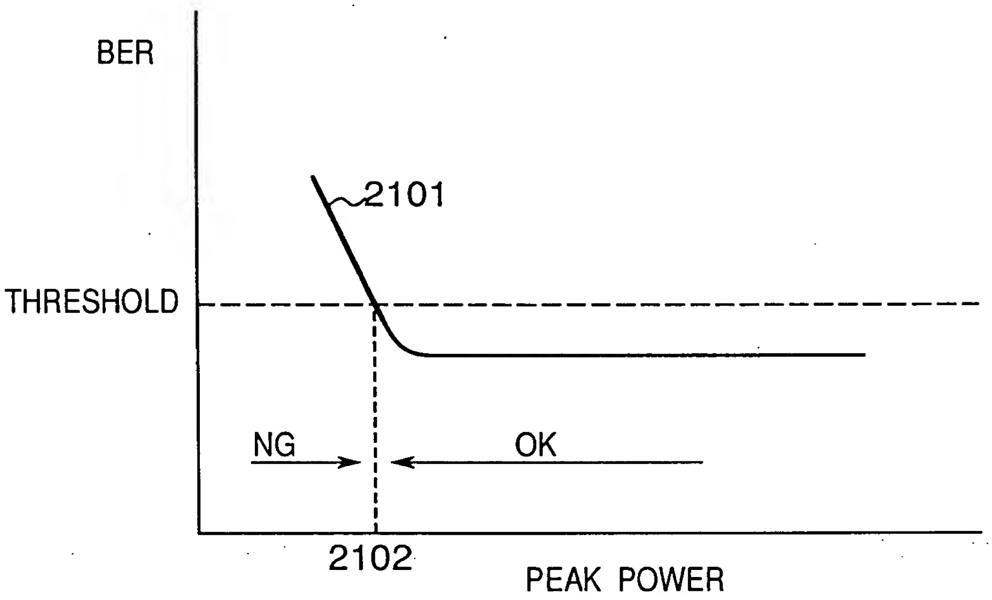

BER
2101
THRESHOLD
NG
OK
2102
PEAK POWER

Fig.22

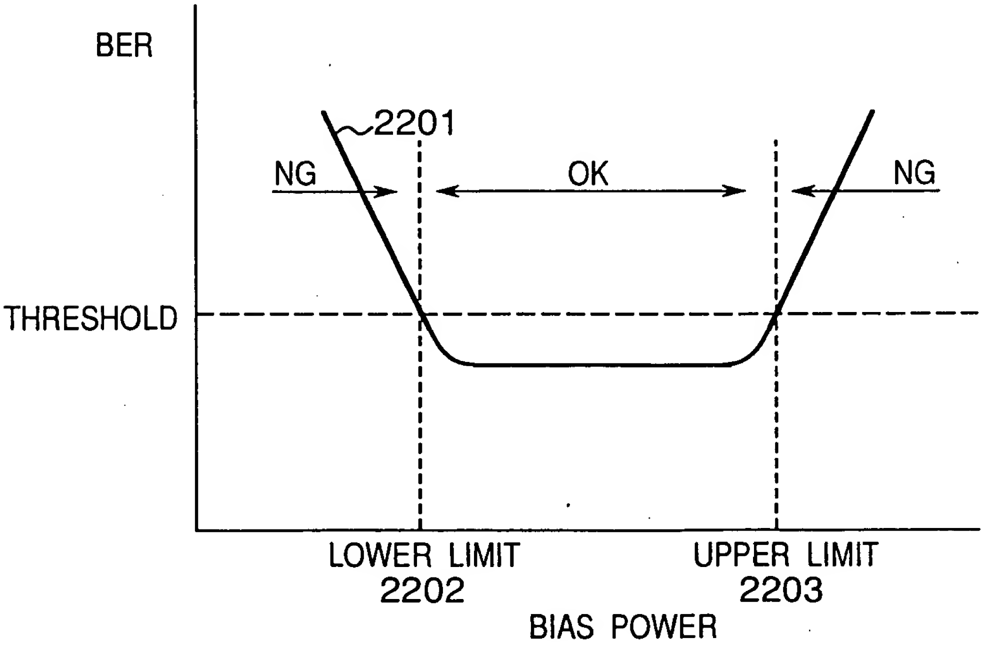

BER
2201
NG
OK
NG
THRESHOLD
LOWER LIMIT
2202
UPPER LIMIT
2203
BIAS POWER

Fig.23

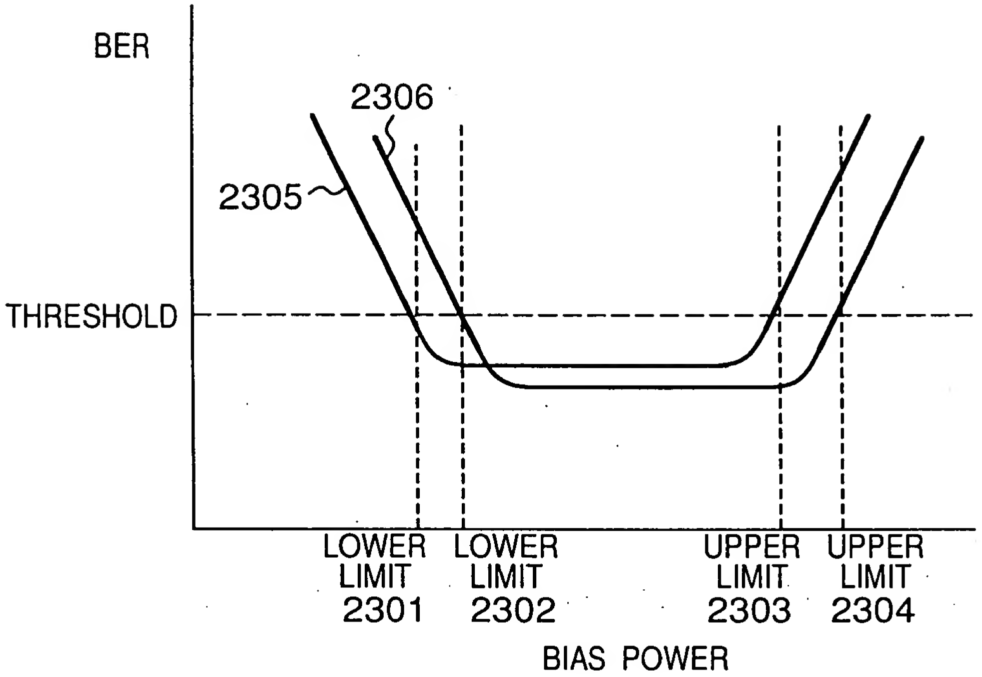

BER
2306
2305
THRESHOLD
LOWER LIMIT 2301
LOWER LIMIT 2302
UPPER LIMIT 2303
UPPER LIMIT 2304
BIAS POWER

Fig.24

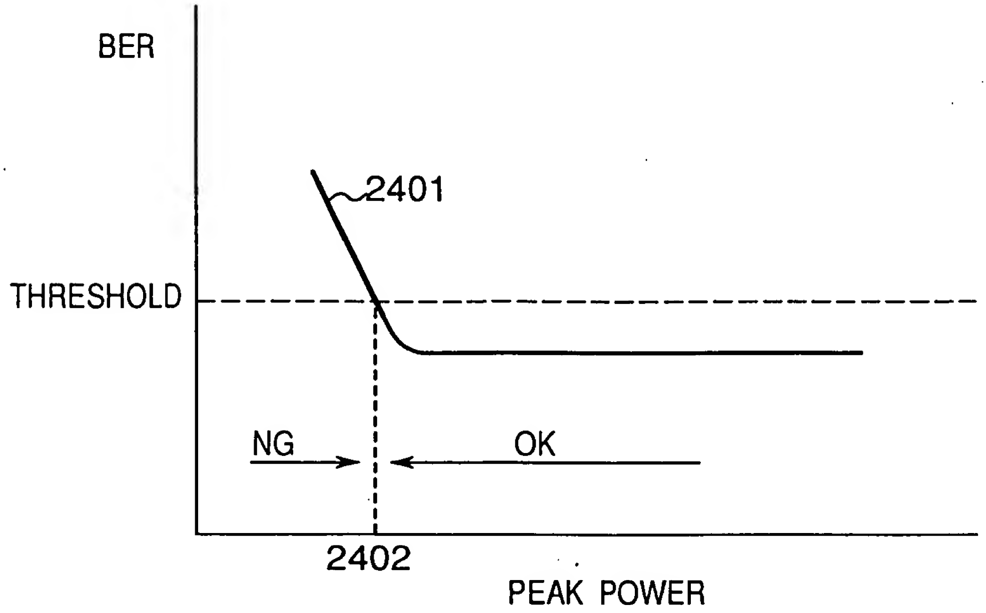

BER
2401
THRESHOLD
NG
OK
2402
PEAK POWER

Fig.25

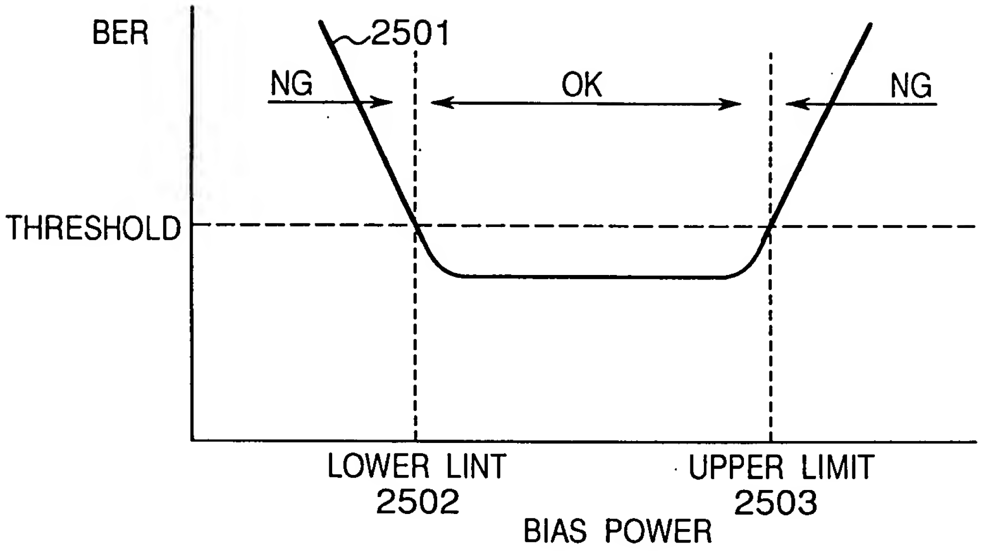


Fig.26

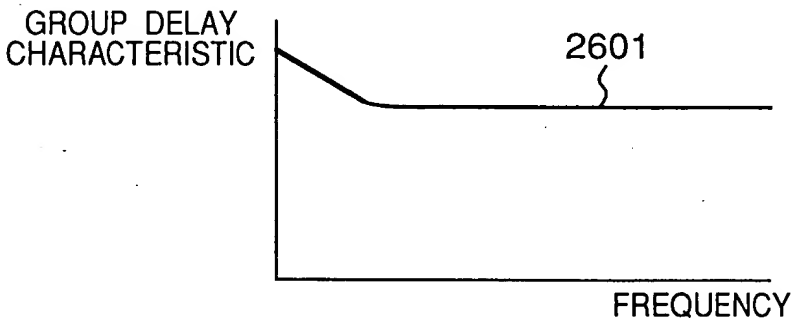


Fig.27

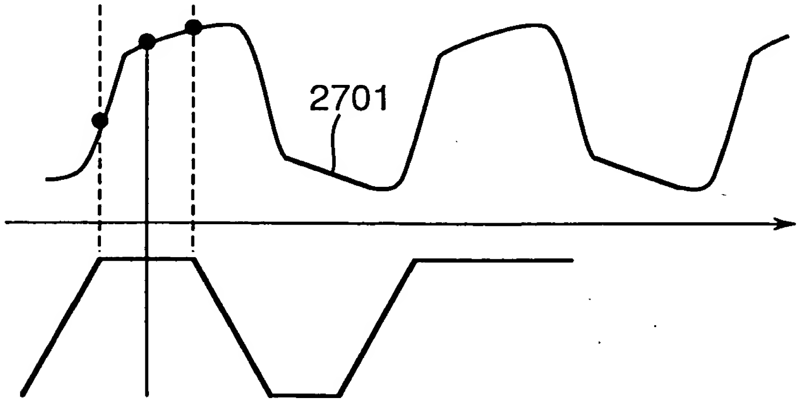


Fig.28A

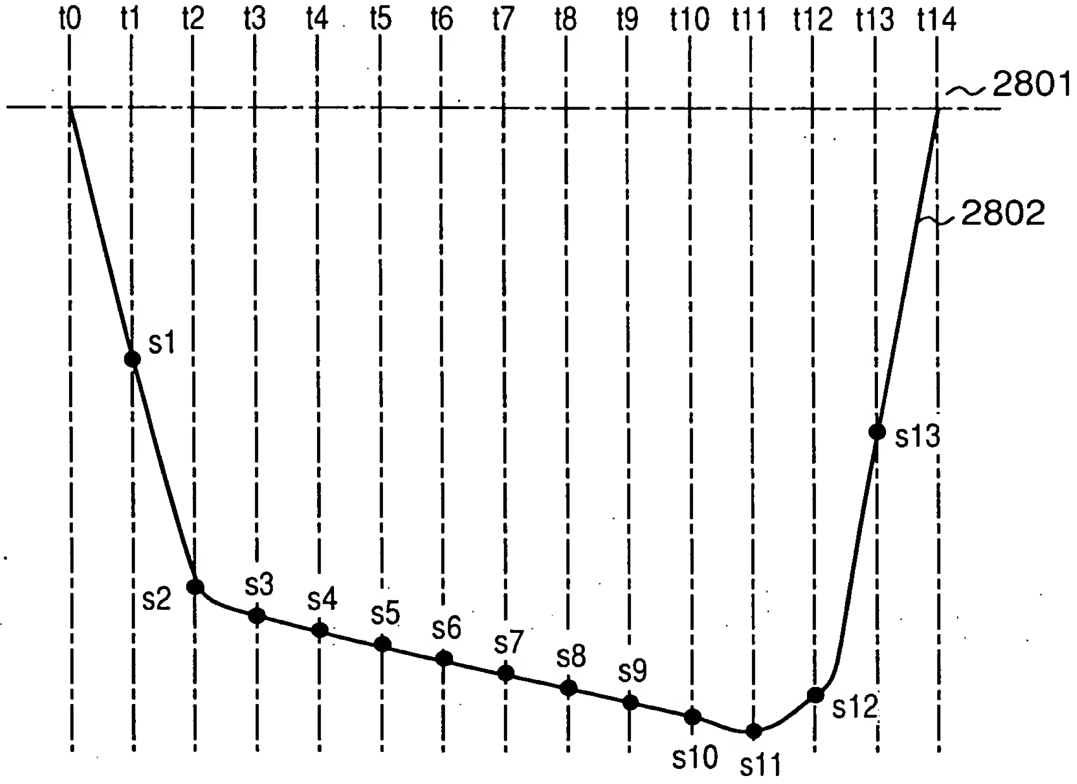


Fig.28B

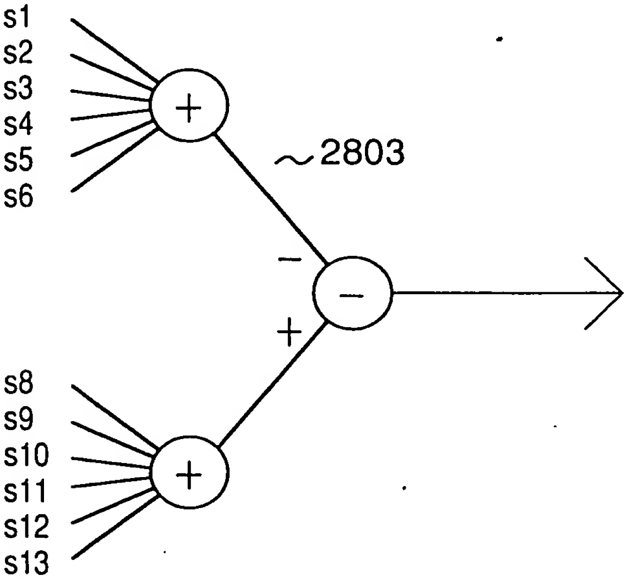


Fig.29A

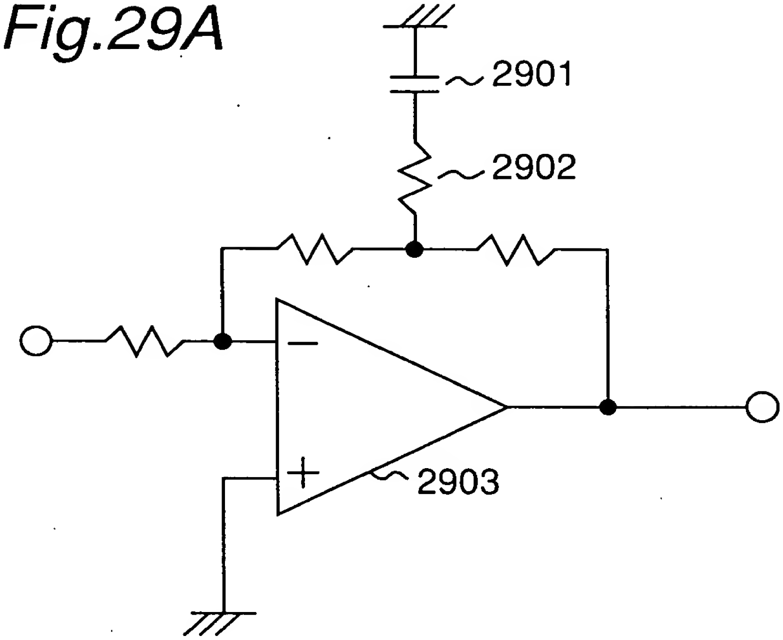


Fig.29B

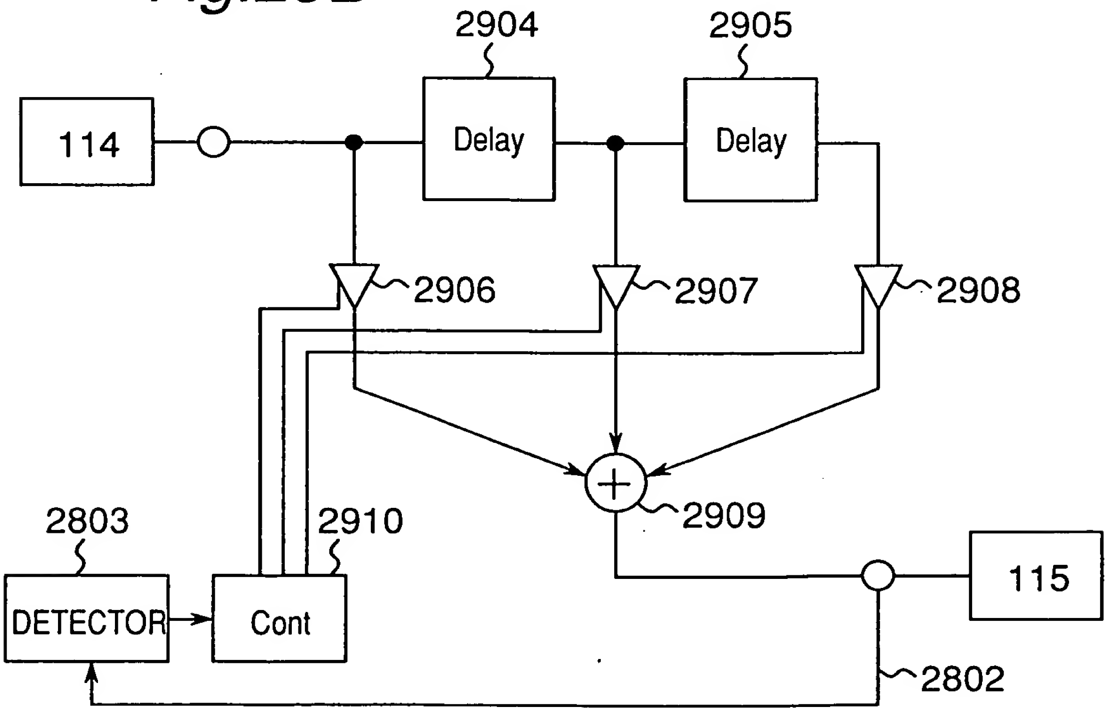


Fig.30

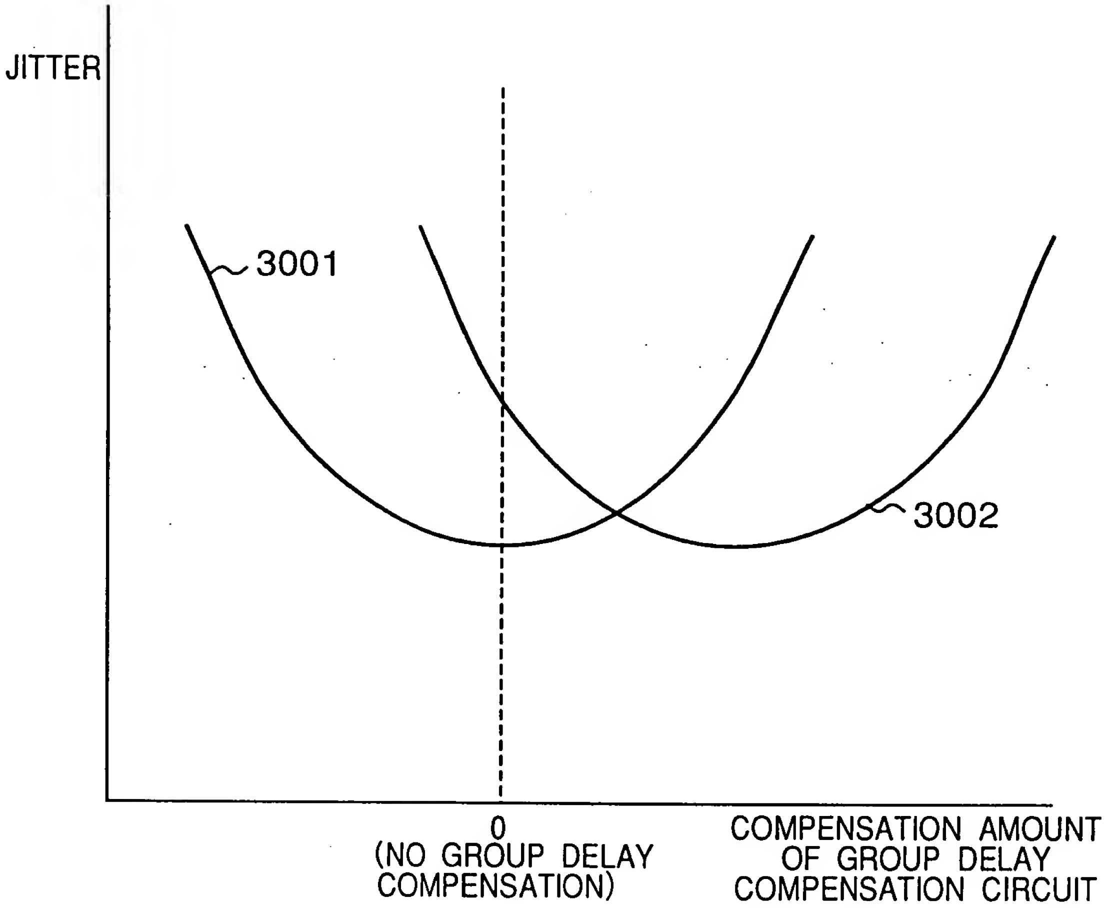

JITTER
3001
3002
0
(NO GROUP DELAY COMPENSATION)
COMPENSATION AMOUNT OF GROUP DELAY COMPENSATION CIRCUIT

Fig.31A

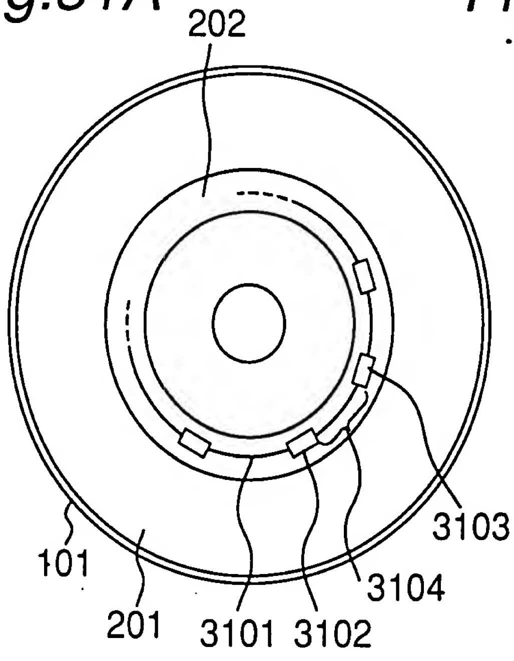


Fig.31B

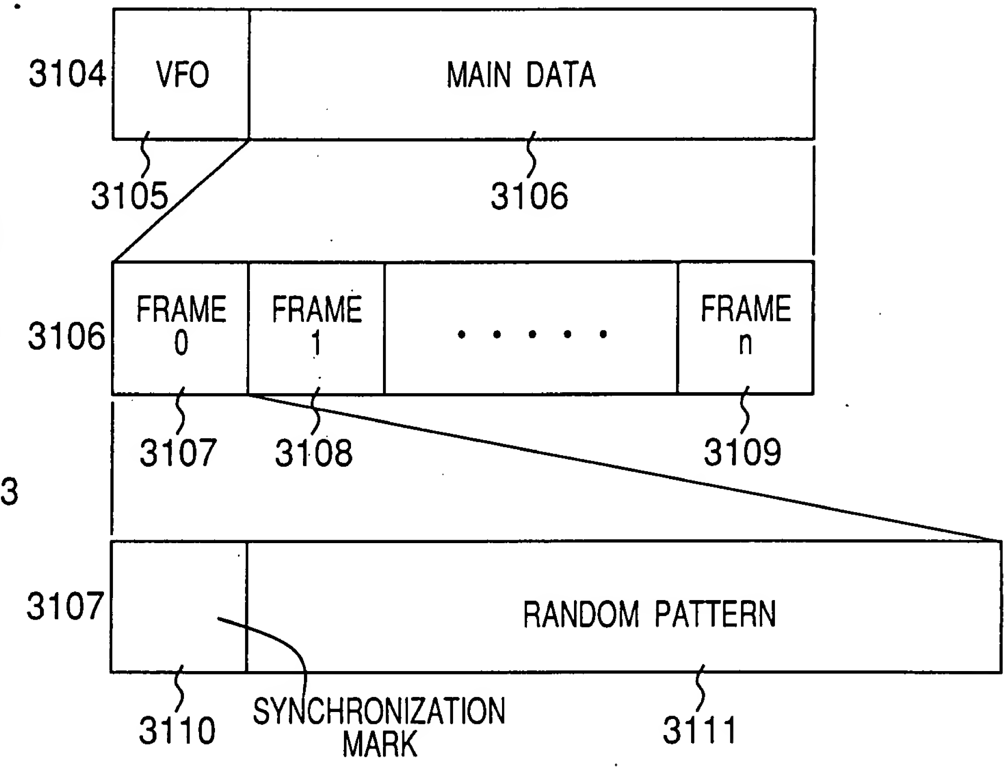


Fig.31C

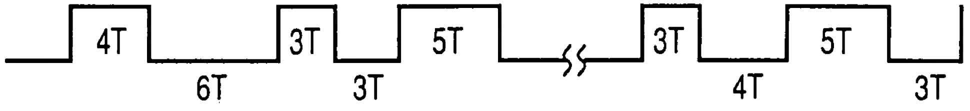


Fig.32

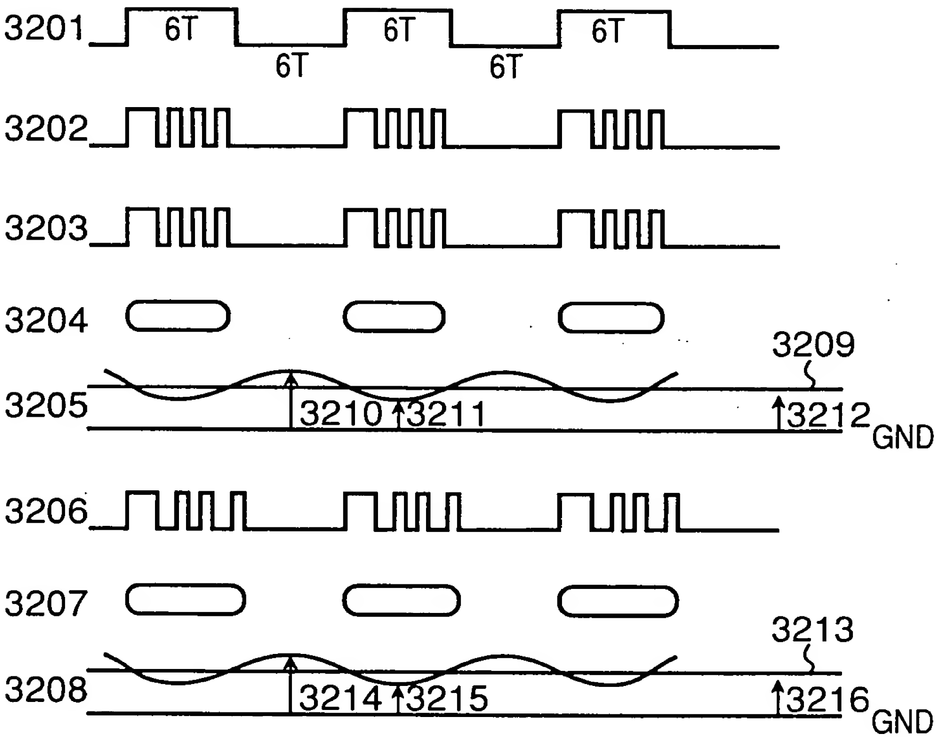

3201
6T
6T
6T
6T
6T
3202
3203
3204
3209
3205
3210
3211
3212
GND
3206
3207
3213
3208
3214
3215
3216
GND

Fig.33

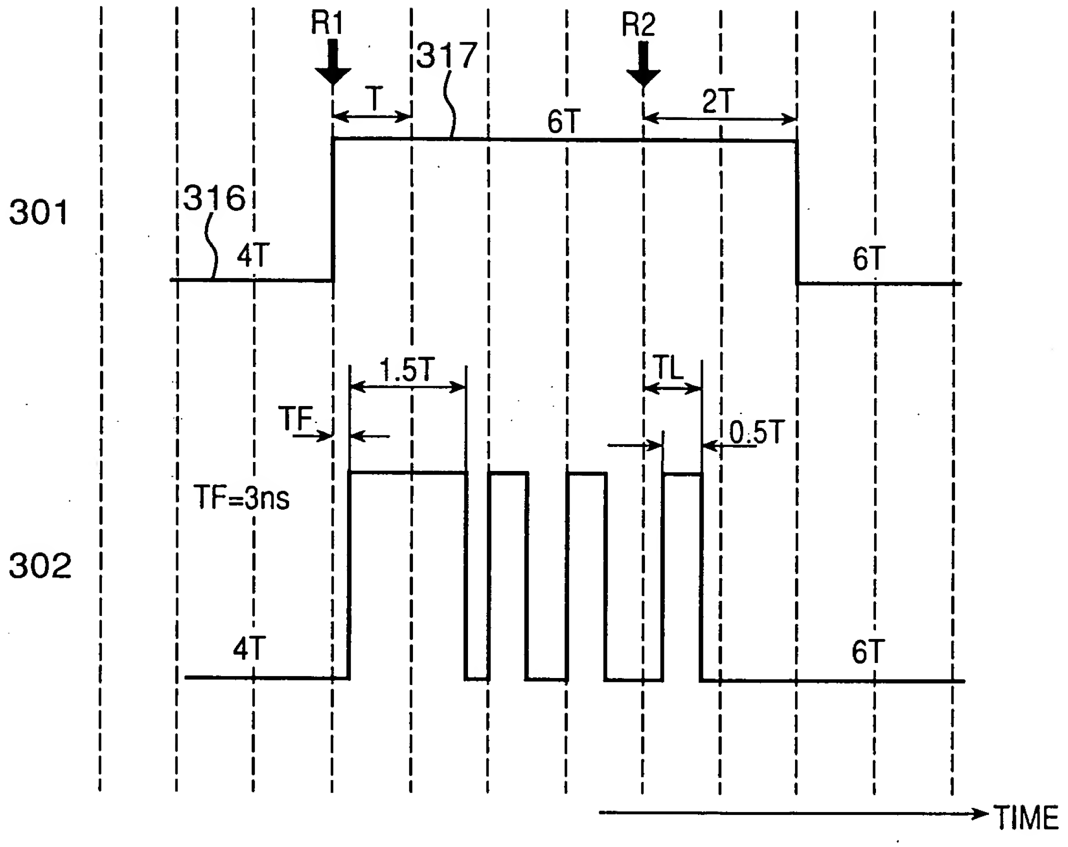


Fig. 34

INSIDE CIRCUMFERENCE SIDE

PIT AREA	INITIALIZATION ZONE	
	CONTROL DATA ZONE	DISC TYPE READ P PULSE ADJUSTMENT METHOD TEMPORARY P INFO (GEN) (PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY) OPERATIONAL P INFO (GEN) (PEAK P, BIAS P, MARGIN CONSTANT) ASYMMETRY (GEN) PULSE POSITION INFO (GEN) DISC SPECIFIC INFO
		REPEAT THE ABOVE FOR FAIL SAFE
MIRROR AREA	CONNECTION ZONE	
RECORDING AREA	GUARD TRACK ZONE 1	
	DISC TEST ZONE 1	
	DRIVE TEST ZONE1	
	RECORDER-SPECIFIC INFO RECORDING ZONE 1	RECORDER-SPECIFIC INFO 1 TEMPORARY P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY) OPERATIONAL P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT) PULSE POSITION INFO (UNIQUE) (ASYMMETRY) P MARGIN INFO
		RECORDER-SPECIFIC INFO 2 TEMPORARY P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY) OPERATIONAL P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT) PULSE POSITION INFO (UNIQUE) (ASYMMETRY) P MARGIN INFO
		• • •
		RECORDER-SPECIFIC INFO n TEMPORARY P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY) OPERATIONAL P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT) PULSE POSITION INFO (UNIQUE) (ASYMMETRY) P MARGIN INFO
		REPEAT THE ABOVE FOR FAIL SAFE
	DISC ERROR MANAGEMENT AREA 1	
	DATA AREA	

Fig. 35

	DATA AREA	
	DISC ERROR MANAGEMENT AREA 2	
	RECORDER-SPECIFIC INFO RECORDING ZONE 2	RECORDER-SPECIFIC INFO 1 TEMPORARY P INFO (UNIQUE) (PEAK P; BIAS P, MARGIN CONSTANT, ASYMMETRY) OPERATIONAL P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT) PULSE POSITION INFO (UNIQUE) (ASYMMETRY) P MARGIN INFO
		RECORDER-SPECIFIC INFO 2 TEMPORARY P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY) OPERATIONAL P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT) PULSE POSITION INFO (UNIQUE) (ASYMMETRY) P MARGIN INFO
		⋮
		RECORDER-SPECIFIC INFO 3 TEMPORARY P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY) OPERATIONAL P INFO (UNIQUE) (PEAK P, BIAS P, MARGIN CONSTANT) PULSE POSITION INFO (UNIQUE) (ASYMMETRY) P MARGIN INFO
		REPEAT THE ABOVE FOR FAIL SAFE
	DRRIVE TEST ZONE 2	
	DISC TEST ZONE 2	
	GUARD TRACK ZONE 2	

OUTSIDE CIRCUMFERENCE SIDE

Fig.36

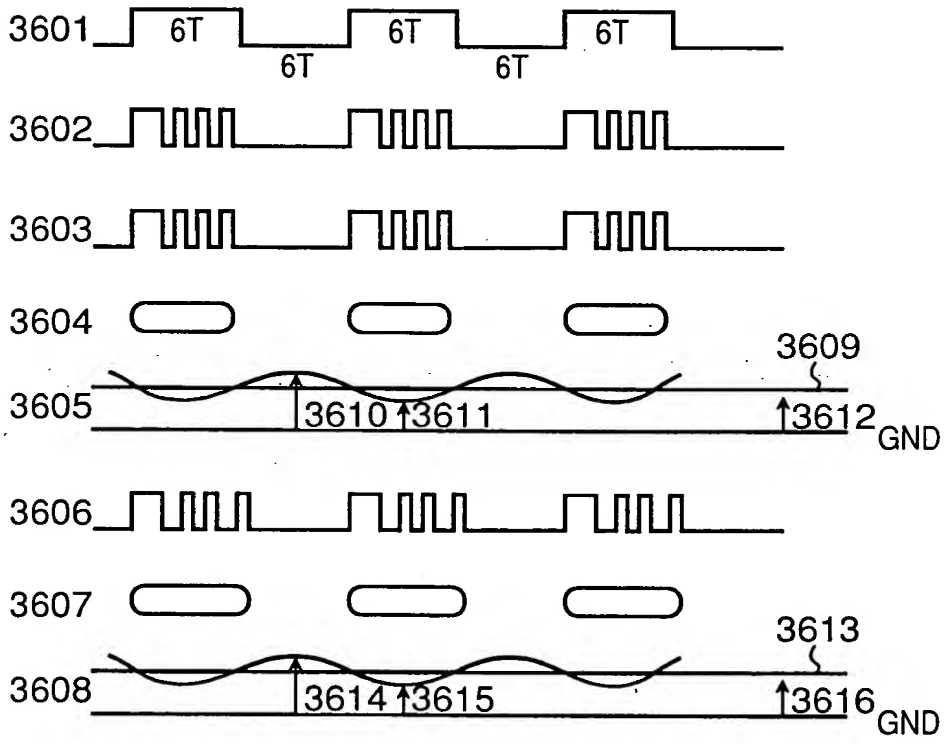

3601
6T
6T
6T
6T
6T
3602
3603
3604
3609
3605
3610
3611
3612
GND
3606
3607
3613
3608
3614
3615
3616
GND

Fig. 37

130

DISC-SPECIFIC INFO 1
TEMPORARY P INFO
(PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY)
OPERATIONAL P INFO
(PEAK P, BIAS P, MARGIN CONSTANT)
ASYMMETRY
PULSE POSITION INFO

DISC-SPECIFIC INFO 2
TEMPORARY P INFO
(PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY)
OPERATIONAL P INFO
(PEAK P, BIAS P, MARGIN CONSTANT)
ASYMMETRY
PULSE POSITION INFO

⋮

DISC-SPECIFIC INFO n
TEMPORARY P INFO
(PEAK P, BIAS P, MARGIN CONSTANT, ASYMMETRY)
OPERATIONAL P INFO
(PEAK P, BIAS P, MARGIN CONSTANT)
ASYMMETRY
PULSE POSITION INFO
POWER MARGIN INFO

REPEAT THE ABOVE FOR FAIL SAFE

Fig. 38

	DATA	ADJUSTMENT		1ST/LAST					TEST	RESULT	MEMORY 130				
			SP		TEMP	OP	ASYM	SP			SP	1ST/ LAST	TEMP	OP	ASYM
FIG. 2	201		△						202		△	△	△	△	
FIG.12	1202	1203	△						1204		△	△	△	△	
FIG.13	1302			1303											
FIG.14	1402	1403		1404											
FIG.15	1502			1503	△	△	△	△	1504		△	△	△	△	△
FIG.16	1602	1603	△	1604	△	△	△		1605		△	△	△	△	△
FIG.17	1702			1703	△	△	△	△	1704	1705—△	△	△	△	△	△
FIG.18	1802	1803	△	1804	△	△	△		1805	1806—△	△	△	△	△	△
	CONTROL DATA ZONE								TEST ZONE	DISC-SPECIFIC INFO RECORDING ZONE					

DATA··········DATA AREA
ADJUSTMENT·AREA FOR RECORDING ADJUSTMENT METHOD WITH EMBOSSED PITS
1ST/LAST······AREA FOR RECORDING INFO OF MARK START/END POSITIONS WITH EMBOSSED PITS
TEST············AREA FOR TEST WRITING FOR OBTAINING INFO OF MARK START/END POSITIONS, OPTIMUM POWER, ETC.
RESULT·········AREA FOR RECORDING THE TEST RESULTS
SP················INFO SPECIFIC TO THE DISC
TEMP············INFO OF TEMPORARY POWER LEVEL INCLUDING PEAK POWER, BIAS POWER, MARGIN CONSTANT, AND ASYMMETRY FOR USE IN ADJUSTING 1ST AND LAST PULSE POSITIONS
OP················INFO OF OPERATIONAL POWER LEVEL INCLUDING PEAK POWER, BIAS POWER AND MARGIN CONSTANT FOR USE IN RECORDING DATA IN DATA AREA
ASYM············INFO OF ASYMMETRY FOR USE IN DETERMINING THE INITIAL POSITION OF 1ST AND LAST PULSES
△················OPTION